Remarks

Claims 1–16 remain pending in the application. In the Office action dated May 2, 2006, claims 5, 8, 11, and 14 were rejected as failing to comply with the written description requirement. Claims 5, 8, 11, and 14 were rejected as being indefinite under 35 USC §112, second paragraph. Claims 5–7, and 11–13 were rejected as unpatentable over Fisher, and claims 8–10, and 14–16 were rejected as unpatentable over Fisher in view of Haller.

The examiner's courtesy in the telephone interview conducted Jun. 8, 2006, is acknowledged with appreciation.

During the interview, amendments to the claims to remove the indefiniteness and new matter rejection were discussed. The examiner's suggested amendments were adopted by applicant as reflected in the accompanying amended claims. It was agreed that if the §112 rejections were overcome, the claims would distinguish over Fisher.

Also discussed during the interview was the arrangement shown in FIG. 2. The examiner had stated in the final Office action that "it is unclear how particles can be precharged by moving corona charged particles past a charging electrode of opposite potential without neutralizing or at least reducing the charge on the particles". Applicant's representative explained that, based on a search on the Web, it can be seen that corona charging is by the production of ions, usually electrons. Once this is realized it is apparent that the purpose of the charging electrode is the generation of ions i.e., electrons, and the electrode potential does not directly affect the charging of the particles. Rather it is the electrons which attach themselves to the particles and charge them. It is thus apparent that the potential of the electrodes is important only insofar as electrons (ions) are generated. The examiner is directed to the following web pages, copies of relevant portions of which accompany these remarks:

* http://www.ppg.com/car_indcoat/powder15.htm
* http://leifi.physik.uni-muenchen.de/web_ph10/zusatzaufgaben/01_ladung/lackieren/lackieren.htm

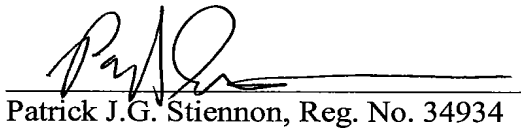
The claims clearly distinguish over Fisher by reason of the positioning of the coating electrodes, the operation performed, i.e., coating a web. In view of the amendments to the

claims, the art of record does not suggest, motivate, or provide an expectation of success for the claimed invention.

Applicant believes that no new matter has been added by this amendment.

Applicant submits that the claims, as amended, are in condition for allowance. Favorable action thereon is respectfully solicited.

Respectfully submitted,



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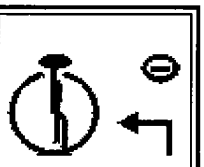
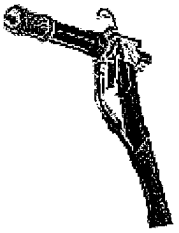
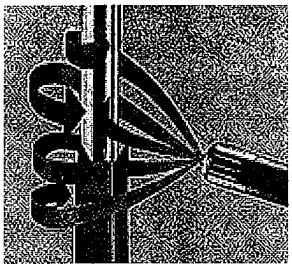
Ph 10 Zusatzaufgaben	Elektrostatisches Lakieren Die Informationen der folgenden Seite sind der Homepage der Firma Wagner entnommen.	

In dem vorliegenden deutschen Text sind die Vorteile des elektrostatischen Lackierens plakativ dargestellt.

- Gehen Sie knapp in eigenen Worten auf das dahintersteckende physikalische Prinzip ein.
- Studieren Sie den englischen Text (evtl. unter Zuhilfenahme eines geeigneten Wörterbuches) und listen Sie knapp auf, welche Probleme beim elektrostatischen Lackieren auftreten können.



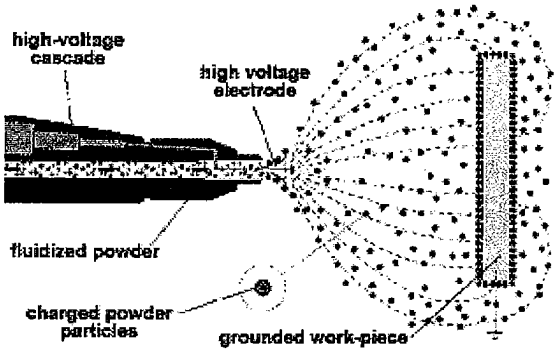


Technik für jeden Winkel Elektrostatik hat unter allen Beschichtungsverfahren die höchsten Zeit- und Ersparnispotentiale. Die Elektrostatik-Technologie bringt bei filigranen Teilen, wie z.B. Stühlen, Zäunen, Profilen nachweisbare Verbesserungen in puncto Zeit- und Lackerspamis. Durch die elektrostatische Aufladung des Lacks folgen die einzelnen Lackpartikel den Feldlinien und legen sich um das Werkstück. Das bedeutet: je nach Objekt muss oft nur noch aus einer Richtung beschichtet werden und das Werkstück ist "rundum" lackiert. Hier ist die Zeitersparnis ein rechenbarer Vorteil, der mit bis zu 85 % zu Buche schlägt. Elektrostatik ist auch umweltfreundlich und kostensparend.
Durch das gezielte Farbsprühen geht weniger Overspray verloren als bei anderen Beschichtungsverfahren, wie z.B. Hochdruck- Luftspritzen oder Airless. Damit spart der Anwender nicht nur Lack, sondern reduziert auch seine Entsorgungskosten und verlängert die Reinigungsintervalle der Abluftanlage.

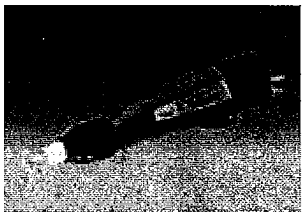
Corona Sprayguns There are two different types of electrostatic charging, and one of them is Corona charging. Corona charging works through the application of a high static electrical charge to a corona charging electrode and powder is charged when passing through the area close to the electrode by picking up free electrodes from the electrostatic field. The charge is generated by a cascade built into the gun itself.

Corona guns normally charge negatively. The high voltage discharged from the corona electrode sets up electrostatic field-lines to the nearest ground. Electrons, generated by the charging electrode, attach themselves to a number of powder particles in the powder cloud . The composition of

any powder is important. Too many small particles will lead to overcharging and a build up of powder on leading edges of the component which is being coated. Too many large particles will attract a disproportionate amount of charge. This will cause undercharging and consequently poor coating thickness. Powders should, therefore, be well dispersed with optimum particle sizes, designed to maximize the charging characteristics.



Electrons which have not attached themselves to powder particles also travel in the air stream and along the electrostatic field lines to the item being coated. This is because it is grounded. The unattached electrons are attracted to the component together with the powder particles where they build up because of the isolating layer of the already deposited powder particles. If too many charges with the same polarity are deposited on the workpiece, the electrostatic force between the individual particles becomes so strong, that they repell each other and get pushed away from the surface. This is called back ionisation. Back ionisation causes discharges within the powder coat itself and also makes it difficult to coat complex shapes. Additionally, back ionisation causes the powder coat to be uneven and when stoved, the finished surface looks like orange peel.

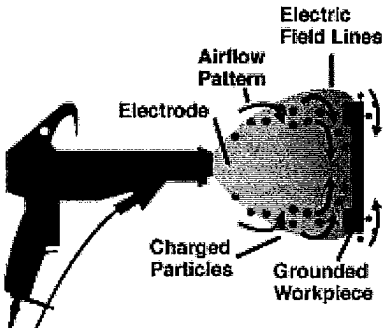


The Faraday effect which prevents charged particles from going into deep recesses and corners can be overcome partially by increasing the velocity of the powder cloud for example by selecting a flat spray nozzle. If however, the speed of the powder cloud is too fast, it can blow powder off as fast as it is applied. By means of the WAGNER "Corona Star" add-on the free ions and electrons can be removed from the powder cloud to a large extend and therefore penetration is improved and "back ionisation" reduced by stripping off the ions through the grounded electrode placed adjacent to the spray nozzle. The Corona Star add-on kits can also be used to retro-fit existing WAGNER Corona guns.

Zur Übersicht

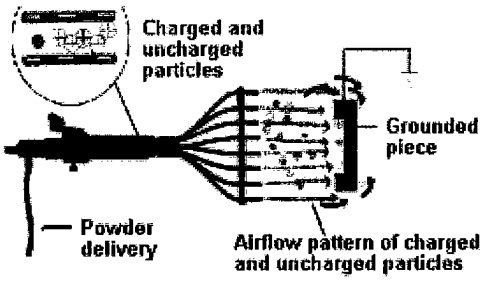
TRIBO CHARGING VS. CORONA CHARGING

Corona Charging



- Particles are negatively charged by electrons generated at the electrode negative
- Strong electric field between gun and part
- Faraday cage effect
- Back ionization
- Charge breakdown & repulsion
- More control over charging process
- Higher coating spray rates
- Less equipment wear
- More faraday cage problems

Tribo Charging



- Electron transfer due to rubbing of particles on a teflon surface charges particles positive
- Weak electric field between gun and part
- Improved faraday cage penetration
- Reduced back ionization
- More sensitivity to environmental conditions
- Lower coating spray rates
- High equipment wear